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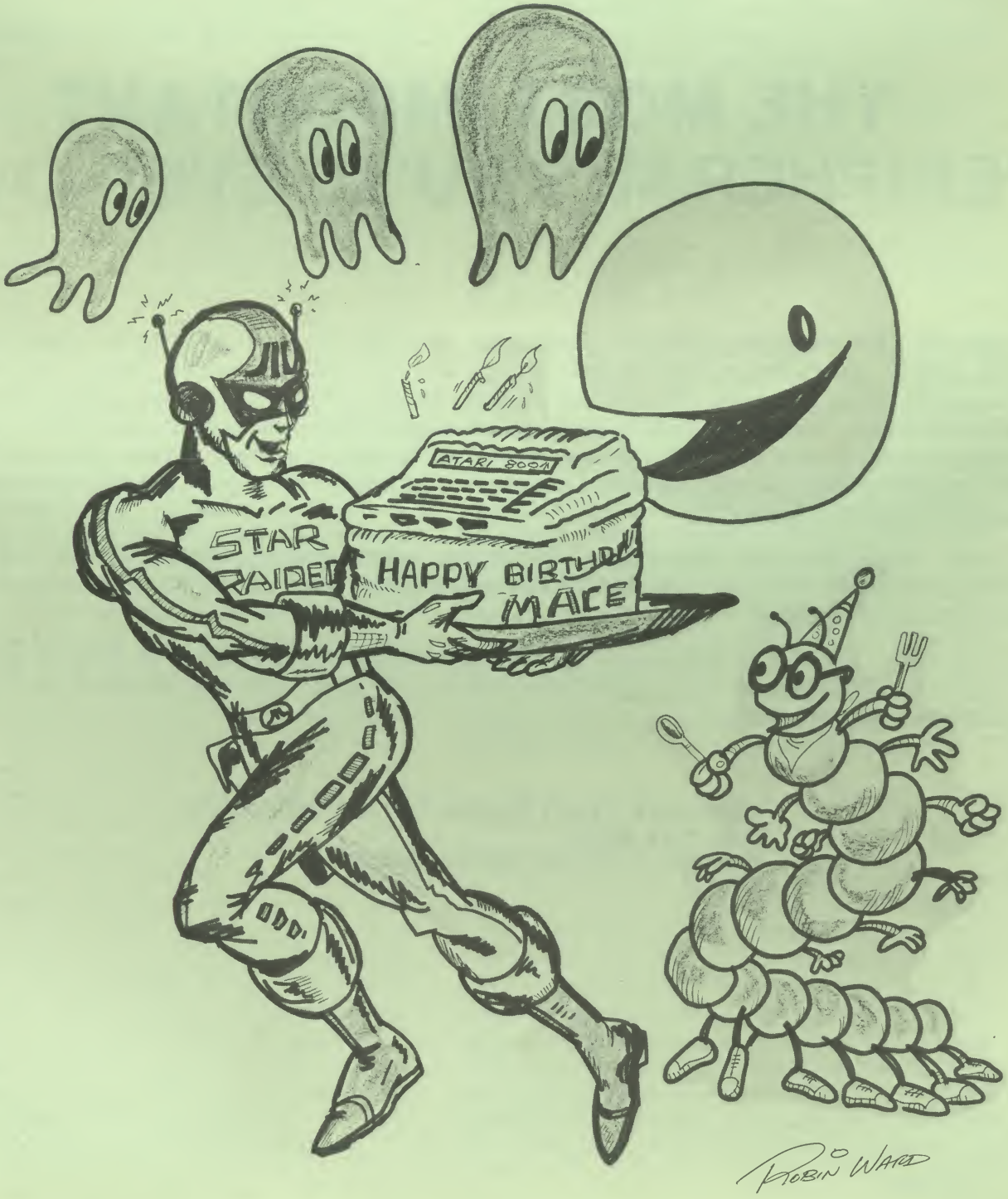

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SUMMER C.E.S. PRELIMINARY REPORT

This huge trade show drew 65,000 manufacturers, distributors, retailers, and PR types to Chicago, to view over 1,000 exhibits of audio, video, computer, and other electronic products, and to figure out how best to foist them upon an all-too-willing public. To be sure, there were plenty of products represented which would appeal to those afflicted with an unnatural fondness for the personal computer, and his idiot brother, the video game.

As a matter of fact, the big news seemed all to be video game related. In the begining there was Atari. And then Atari begat Activision, who begat Imagic, who begat...well, at this point the begatting gets so frantic that you need a scorecard. Despite the ancient (4 year old) technology of the VCS, there are 8 or 9 million of them out there. The sucess of Activision, whose sales went from $750,000 one year to $12 million the next, has inspired many, many, many, others to follow them in marketing games for the VCS. These outfits range from the veritable unknowns (Arcadia, Tigervision,) to the corporate giants (Parker Brothers, Twentieth Century Fox, Vidtec, a Quaker Oats subsidiary), right on through the competition (Mattel, Coleco). I bet that I saw over 20 outfits marketing new lines of VCS cartridges, and I didn't see them all. It seems that the number of variations on a theme are endless. Despite the fact that Atari is showing a VCS version of Star Raiders, Activision has a clone of it ready for release, as does Arcadia (whose other big releases include Communist Mutants from Outer Space). There are even clones of clones--Tigervision has a VCS version of Jawbreaker, licensed from On-Line! Other biggies have gobbled up licensing rights to arcade games like so many Pac-pellets. Parker Brothers showed Frogger for the VCS, as well as a Star Wars game based on the Imperial Walker scene from Empire Strikes Back. Coleco showed Donkey Kong for the VCS, as well as for Intellivision, and their own game system. The list of VCS programs shown goes on and on (third parties aside, Atari showed about 13 new VCS games), and the quality ranged from the mediocre to the amazing, considering the VCS technology.

Speaking of technology, some notable advances were made in the video-game field. Coleco's new system, Coleco-vision has about the best graphics I've seen outside of an arcade. Their Donkey Kong duplicates the arcade graphics exactly (at least for the first screen), and if the video tapes they had of Zaxxon and Turbo were accurate representations of the games to be released, then all I can say is go to the arcades, and what you see will be what you're going to get from Coleco. I hate to admit it, but I don't think you could duplicate those graphics on the 400/800, and it is possible that you could not even get close in some cases.

Of course, some games require better resolution than a TV screen can offer. Enter the Vectrex Arcade system, which comes complete with its own 9-inch vector graphics screen. Licensed software includes Scramble and Berzerk. But enough about video games. Nobody plays them anyway, so who cares? What about computers?

Well, from Atari, the news is more of the same, at slightly better prices. Despite rampant rumors of new computers, despite the crying need for good disk drives and printers, all that Atari had to announce in the way of computer hardware was a new direct connect modem, to be available sometime. It will be used with the new Telelink II cartride, which will let you download to memory, but still won't let you dump to disk! This combo tentatively scheduled to be priced about $275 (you won't need the 850 interface, which this modem resembles). For those of us who have the 850, and can buy Tom Giese's terminal program and a Signalman direct-connect modem for under $100, this is cold porridge indeed.

About the best news from Atari on the hardware front was another reduction in the price of the 400. The new retail price should be $349, with a significant enough cut in the wholesale price to allow dealers to march them out the door for under $300, a la VIC. This makes the $350 price tag for the 5200, the new supergame, seem a bit odd--so far, most of the software shown on this system duplicates exactly the game cartridges of the 400/800 series that we know and love (exceptions-a Galaxian game which is not much different than Galactic Chase, a reworked Space Invaders, much like Super Invaders, and

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a football and baseball game). Besides trading the keyboard for a multi-feature joystick, the advantages of buying the game over the 400 are not readily discernable. Nonetheless, the 5200 display was right out front, and was one of the largest, with about 40 games around a circle in constant use.

Atari's personal computer exhibit was a lot more dignified, as well as being smaller and back in a corner. Software displayed included a revamped My First Alphabet for main line release, another revision of Centipede, which is getting better and better, and which hopefully will come out this fall, and the new APX game Salmon Run, written by a fellow from Clarkston, Michigan (who is this masked man? Someone better grab this guy for a MACE meeting). Also shown were the new Home Filing System (made user friendly by making the screen look like a 3X5 card). Arlan had a quick glance of Sir Galahad and the Holy Grail, but the demonstrator was told "don't show that--it's going into the main catalog". It seems that under the new rules of the APX contest, a program doesn't have to be published through the exchange to win. This program, written by Doug Crockford of the Atari Computer Association of Orange County (he puts out their newletter almost single-handedly in his spare time), may have the distinction of being the first APX winner not to be sold through APX. On the other hand, the new APX catalog says that they are going to start to a copy-protect software that they distribute, and that releases of some titles may be delayed until the details of the protection scheme are worked out. So even those programs which are not destined to be picked up as Atari products might not see the light of day until the third quarter of some year or other. Well, regardless of the release date, a hearty congratulations to the involved Atarian from Orange County.

One of the best parts of the show was the opportunity to talk to some of the software developers about their new releases. Ihor Wolosenko, of Synapse Software was especially accomodating. He was demonstrating his new Atari software almost non-stop, and the level of interest was an indication of the high quality of his products. Though Synapse started small, with just a couple of professionally-produced programs, they seem to be rapidly expanding, while maintaining their commitment to quality, service, and fair pricing. We had a chance to see:

Nautilus--a new one from Mike Potter. This is a sub-chase game with a twist. Two players compete, one manning a submarine, the other a surface ship. The screen is divided horizontally into above-water and underwater areas. These two screens scroll independently, the lower one scrolling both horizontally and vertically. Each player has a task to complete, while at the same time tying to sink the other vessel. There is a one player option, and the user can determine the length of playing time, and, I believe some handicapping as well. Were I given to hyperbole, I might say that this game was "the best". As is, I will just say that the game is not only technically well done, but appears to be interesting, innovative, and fun to play.

Fort Apocalypse--This seems to be a much-improved Protector. This time, the player steers a helicopter through a multi-level canyon, with a mission to free prisioners. The scaling is a little larger than Protector, the scrolling goes in all directions, and generally the game seems thoroughly playable, but TOUGH.

Shamus--is a game which is sort of like an enhanced Berzerk. The individual maze screens are less complex, but there are more attacking creatures, both in number and kind. You must fight these creatures off, get the key which will let you get to the next level, and then find the room with the lock (there are 4 levels, each with 34 rooms). If you get through them all, you have a final showdown with Shadow, an Evil Otto walk-through-walls type that pursues you all throughout the game.

The following were more preliminary versions, so don't be surprised if the final versions are somewhat different than described:

Slime--the fun game of goo for the whole family. You are awash in a sea of cosmic slime, which is falling, drop by disgusting green drop, from the sky. Your defense is a little plane that can drop airborne wedges to direct the slime into two drains on the sides. But your wedges only stay aloft for ten seconds, and must be constantly renewed. Slime that doesn't go down the drain raises the level of the green sea, until you are up to

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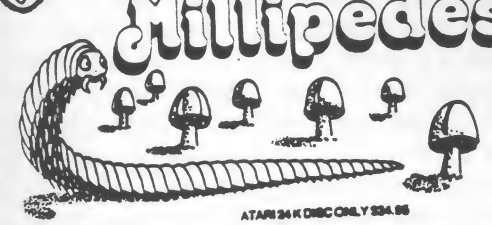

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your vertical blank in the disgusting stuff. Yecchhh. This is a very creative Invaders spin-off, but some might find the subject matter (and the realistic mucous-green graphics) in questionable taste. I personally thought it was a hoot, but probably wouldn't play right before dinner.

Gold Rush--This was a very early version, but the game is a cute two-player contest to pick up gold nuggets, exchange them for money, and avoid tumbleweeds that turn into snakes. Gretchen liked this one so much that while she was playing it the pitch of her voice got higher and higher, until dogs started fleeing the vicinity. This will undoubtably be a favorite with those who shun the "blast aliens" type of arcade violence.

Besides the arcade games (some of which will be eventually released on ROM cartridges, by the way), a new release of FILE MANAGER 800 is just about ready, and owners will be able to upgrade for about $20. The new version will support numeric fields, do a mail-merge with the new Textwizard, and will also support the Axlon Ramdisk. A Vistrend-Visiplot type program is also planned, which will let you interface data base entries with Visicalc as well. Also ready for release are a new assembler, and machine-language utitilites. Lastly, Synapse plans to have a bulletin-board service to communicate with users, and allow downloading of programs to be used with their database family of programs.

K-Byte was also well represented. They previewed their new line of cartridge games. A definite favorite was Krazy Antics, a maze game with 4 ants in an anthill, some unexpected tropical showers, and an anteater with a very long tongue. This one was tops in graphics and play values. Another goodie was Krazy Kritters, yet one more Invaders varient, with good graphics and a cute twist. You'll really like the bulldozer that clears away the rubble. Finally, K-Star patrol pits you against some flying baddies as you scroll over the planet's surface. You'll hear more about these later, but for now, suffice it to say that these games are simple, colorful, professional arcade types.

Other Atari software shown included some new releases by Computer Magic, (who produced Kayos), including Pogoman. Datasoft was at the show with their new Canyon Climber, but didn't have a release date for the new Textwizard, or the Atari BASIC compiler. Also of interest was Thorn-EMI's announcement that they would market cartridge software for the 400/800 by the end of the year. Though I didn't get a chance to see any of the new software, they have produced some good things in the past. Automated Simulations (Epyx) was there with their Temple of Apshai series, and promises of new adventures by Marc Russel (Mr. Atari) Benioff.

About the only notable news as far as third-party hardware at CES was a proliferation of joysticks and trakballs. We will have to look some of these over, and more importantly play-test them before making any definitive pronouncements, but sticks were available in all shapes and sizes, from $15 to $40. Trakballs were shown in the $65 to $70 price range, including one from Datasoft which is not yet available, but which felt pretty good. Atari even had a prototype trakball hooked up to the 5200, but said that they were far from releasing one. These balls generally work on joystick games, as well as in the special Missile Command trakball mode.

Of course, Atari isn't the only computer in the world. Commodore was there with a huge display of VICs (a computer which doesn't seem to be particularly well placed in the market), the Mini-Max (which offers almost as many many computer features at a ridiculously low price of $150), and the Model 64, a 64K standard full-power graphics and sound computer for under $600, which may be a real threat. I got to see the Mini-Max, which has a touch-sensitive keyboard that is raised, so at least it gives some positive response, and there was one Model 64, but not a lot of literature was available. If it wasn't for Commodore's proven ability to self-destruct, I would say positively that the Minimax and the Model 64 (which also offers a Z80 expansion card) are THE machines to watch. But we'll have to wait and see. Another interesting computer at the show was the new Sinclair Spectrum. Their first computer sold over 400,000 units, because of its popular price. Now that Timex will be selling that model for $99, Sinclair has come out with a 48K machine with a Z-80 chip, extensive color graphics and sound, for about $300 complete. Like its predecessor, it is about book-sized. This one

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has calculator-type keys, and one-key command entry. It can be used with the tiny ZX printer, and RS232 capability will be offered for about $35. The most amazing part is yet to come, because they advertise in the near future a micro-disk drive that will store 100K per disk, with a transfer rate of 16K per second, for under $100. That is not a misprint. Clive Sinclair says he will sell a disk drive for under $100, and based on past performance, we can only guess that he will do exactly that. From the way the pictures look, the whole drive will fit in the palm of your hand. Next thing you know, we're going to have to come up with little teeny tiny people to run these little teeny tiny computers.

Needless to say, there were a whole lot more things at the CES than I've reported above. The publishers of both Antic and Analog were around, showing off their new issues. Both magazines appear to be doing very well, and Analog in particular has really expanded its format--it looks to have doubled in size. There was also video porn, talking toasters, radio/video game/calculor watches--in short, the retched excess which is the culmination of five thousand years of civilization. If my electric foot massager can ever get my tootsies back into shape, I may go again some time. Ⓜ

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DOWN MEMORY LANE

By Sheldon Leemon

Well, by now you must think that we here at the old MACE newsletter have lost our marbles. For two months now, I've been printing columns about the GET BYTES-PUT BYTES CIO routines, and for two months, the routines as published don't work. Actually, the bugs were kind of easy to find, as they are duplicates of statements that do appear correctly elsewhere. Nonetheless, to lay this thing to rest, here they are, one more time:

To save the screen:

```
1000 OPEN #1,8,0,"D:SCREEN.DAT"

1010 PUT #1,PEEK(939): FOR I=708 TO
712:PUT #1, PEEK(I):NEXT I

1020 RAMTOP=PEEK(106)*256: DL=
PEEK(560) + 256* PEEK(561): BYTES=
RAMTOP-DL: HI=INT(BYTES/256):
LO=BYTES-(HI*256)

1030 POKE 850,11:POKE 852,PEEK(560):
POKE 853,PEEK(561): POKE 856,LO:
POKE 857, HI

1040 X=USR(ADR("hhh*LVd"),16):
CLOSE #1: REM The * and d must
be inverse video
```

To read the screen back:

```
2000 OPEN #1,4,0,"D:SCREEN.DAT"

2010 GET #1,A: GRAPHICS A: FOR I=
708 TO 712:GET #1,A:POKE I,A:NEXT I

2020 POKE 850,7:POKE 852,PEEK(560):
POKE 853,PEEK(561):POKE 856,255:
POKE 857,255
2030 X=USR(ADR("hhh*LVd"),16):
CLOSE #1: REMember to invert * & d
```

The corrections include multiplying the address high byte by 256 in line 1020, and finally typing in the correct number of h's in the USR statement at line 2030. I hope this does it, and that you have fun using this routine to read in screen data, character sets, and machine language subroutines. Ⓜ

IN 13 SECS? K-DOS

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Oak Park, MI 48237
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K-DOS makes an interesting follow-up to K-Byte's first release, K-razy Shootout. As you might have guessed, this is not a game, but rather an alternative to Atari's Disk Operating System, DOS II. While its file management system is compatible with Atari DOS, K-DOS offers a greater level of control over devices and memory, and is structured so that it is easy to use. Some of the features it offers will be appreciated by every Atari user, but many are of interest only to the serious programmer. Since the benefits to be gained by using K-DOS come at the price of certain trade-offs, the potential buyer should think hard about how much a more convenient disk operating system is really worth to him or her, before taking the plunge.

Chief among these trade-offs is the amount of memory it leaves available to the user. K-DOS is memory resident, and while that make most of its features immediately accessible, it also takes up a lot of space. With a BASIC cartridge inserted, the amount of free memory available in a 40K system is 25228 bytes. This is almost 7K less than the 32274 bytes available with Atari DOS, or the 31758 bytes available with OS/A+. Besides reducing the amount of memory available for programming, K-DOS' large size puts the start of low memory above $3000 (although an optional program included with the package will let you remove the plain English error messages, which saves enough bytes to bring the end of K-DOS just below $3000). Because many machine-language programs are assembled to run just above the end of Atari DOS, these programs may conflict with K-DOS, and may not run under it.

If you have the memory to spare , however, KDOS has many attactive features to offer. The improvements in human engineering make it a pleasure to use. The best example is the fact that any of thg DOS functions are accessible from BASIC, PILOT, the Assembler cartridge, or whatever program environment you happen to be in. Since K-DOS is command driven, you don't have to call up a menu to execute a DOS function. All you have to do is precede the command by a comma (or some other character which you can define as significant to DOS), and the DOS function will be executed without changing program environments. The syntax required for command lines is flexible, so that commas can be replaced by a space, lower case is acceptable, and the DOS environment automatically resets the inverse character shift. Device defaults are supplied whenever possible, and short abbreviations are allowed, so that a minimum of keystrokes are required to perform any given function. Error messages come back in plain Enlish, rather than a frustrating number code. Unlike OS/A+, which puts you back in the DOS environment every time you hit System Reset, K-DOS only will bypass BASIC if you hit the Start key along with System Reset. And unlike Atari DOS, the device handler for the 850 interface unit will be booted automatically at power-up if it is turned on, without the need for a separate AUTORUN.SYS file.

The reason that K-DOS can let you use DOS command lines from BASIC is that it reroutes all input to the line editor (although it gives you a command, KILL which will take its "hooks" out of the handler table if desired). This greater level of control over the system is characteristic of K-DOS. For example, the 6502 BREAK instruction is vectored to get you back to DOS any time the instuction is encountered, rather than have the system "hang up". You may get a little better idea of what this means if you slip in the BASIC cartridge and type INPUT (carriage RETURN). With Atari DOS II, the system locks up, and the only way to recover is to turn the computer off and reboot. With K-DOS, a BRK message is given, and you enter DOS. You should even be able to recover from the dreaded "editing lock-up", which occurs when BASIC moves a block of exactly 256 bytes (you will still have to know enough about how BASIC works to reset the statment pointers, however, as that particular bug tampers with your program code before it crashes the system). Another aspect of K-DOS' system control is that it allows you to stop disk I/O just by hitting the break key, without destroying your data. It also tries harder to read and write marginal sectors before bombing out, which is important given the notorious speed fluctuation of the older

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*white **white/green ***white/green/brown •strip-off margins

Atari disk drives.

K-DOS lends nice new touches to some of the original DOS functions. For example, INIT combines formatting and writing DOS files to the new disk in one operation, although these functions are still available separately. The duplicate disk function allow you the option of a straight sector copy, for boot-disks that do not have file information on them, and also allows the faster write without verify, and continuous retrying of bad sectors. There is a separate APPEND command, and it allows you to enter data on to the end of a file directly from the keyboard. Also, the append function uses any space available in the last sector, rather than starting a new sector like Atari's does. The binary load command will print to the screen the location in memory into which the file is being loaded, if you so desire, which is a lot more convenient than reading the headers and calculating the addresses by yourself.

But K-DOS doesn't take up all that memory just to give slight modifications. It also contains a complete machine language monitor. This allows you to examine memory in hexadecimal and ASCII formats, to alter memory by typing in either hex or ASCII values, and to examine and alter the contents of the registers as well. It give you two ways to execute a machine language program. GO runs the program after closing all devices, and does not preserve the registers. PROCEED will continue a program after a breakpoint has been reached, without changing the contents of the registers or the status of any device, making it a very handy debugging tool. Similarly, the command XIT will let you get back to a BASIC program that calls DOS, and will continue to run that program from the point at which DOS was called. A null device handler has been added, so that you can test I/O operations quickly by directing them to N:. LOMEM lets you examine and alter the bottem of memory available to a cartridge. This allows you to reserve space for machine-language programs, or just to reduce the amount of memory available to see if a BASIC program will run on the minimum 16K system. UDC allows you to add your own user-defined commands to the system.

In addition, K-DOS offers many commands which allow you to access certain routines used internally by DOS, just by giving a one-word command. For example, COLD and WARM provide an easy way to coldstart or warmstart a cartridge. RESET reboots the 850 handler when you have expanded the drive buffers, or just forgot to turn it on when you booted up. TEXT corresponds to a GRAPHICS 0 call in BASIC, and opens the screen device, which is handy for moving the display list when you want to load a program into high memory. CLOSE closes all files, turns off the sound, resets VBLANK vectors, and turns off Player-Missile graphics. ER followed by a number will print the Enlish error message for that error number, which is very handy when you want to interpret I/O errors that are generated by BASIC. None of these functions are earth-shaking, and all can be otherwise accomplished with a little effort, but the author's attitude was that as long as the routines for doing them were already in DOS, it made sense to allow them to be accessed easily.

Unfortunately, the lack of depth in the documenation runs somewhat counter to this intention of allowing the programmer easy access. The glossy K-DOS Handbook is nicely bound, comes with a pocket summary card, is clearly written, gives examples of the proper syntax for each command, and covers most of the commands very well. But it treats some of the more esoteric commands in a cursory manner. Take, for example, the handbook's explanation of the UNLOAD command: "Tries to erase area where cartridge is; unloads any RAM based cartridge and resets LOMem back to end of DOS." The beginner will no doubt read this sentance, re-read it once to verify that all of the words are in Enlish, and then press on, no better or worse for the experience. The sophisticated user, on the other hand, might gather from this explanation that it is possible to load a program into RAM, and fool the system into thinking that it is cartridge based, allowing an easy transition back and forth between that program environment and DOS. The inference would then be that the UNLOAD command erases this program, and lets the system know that no cartridge is present. But how do you set up this "RAM based cartridge" in the first place? No clue is given, leaving the sophisticated user perhaps more frustrated than the beginner. Another example in the same vein is the system equate files that are supposed to give the user access to system routines, such as the one to type text messages from a

continued

buffer. There are no detailed examples included of how to use them, however, and the internal commenting is too scanty to allow most users to benefit from them. Features like these could be real selling points to the ambitious programmer if treated less superficially in the documentation.

My subjective impression of K-DOS is that aside from these omissions in the documentation, it is a convenient tool for the user who is serious about programming. As one who uses his computer mostly for programming, I have found it especially helpful in developing software that combines BASIC with machine language subroutines. But I think that KDOS will be of much less interest to the casual programmer who doesn't have at least 40K of memory. While such a user might really appreciate some of the features, he or she would probably never take advantage of the machine language monitor, the null device, or many of the other goodies which make K-DOS so big, and so expensive. If you fall into that catagory, you would probably be more satisfied spending the money on something that would let you gobble dots, eradicate insects, or save the universe. Ⓜ

Editors note...

Who should know better about video games than a kid? Well meet our newest writer (and token kid)!

GAME REVIEW

By Eric Chodun

Rating Scale
*** excellent
** good
* okay

PAC-MAN (Atari)***

Pac-Man is an excellent game that runs on a cartridge. It is identical to the arcade version we all know so well. You can choose the number of players and the type of board (maze) you want to begin with. Cherry is the easiest and Key is the hardest. To clear a board you have to eat up all the dots in the maze. Boards get harder as you clear them. Pac-Man is an excellent Atari game!

MEGALEGS (Dubna)**

Similar to Centepede, this game has good graphics. Shoot mushrooms, turtles, and spiders for points! The centepede moves closer and closer to the ground.

In Megalegs you have to have quick reflexes because so many things go on at once. Megalegs runs on tape or disk.

RASTERBLASTER (BudgeCo)***

Rasterblaster brings you back to the old pinball places where everyone used to hang out. You can play up to 4 players and either a hard or easy game. You control the flippers with two joysticks. You can also control the friction of the ball. Excellent flippers and graphics, well worth the money.

CENTEPEDE (Atari) ***

Atari made the arcade version of Centepede and this one is just like it! Point scoring is the same, moving is easy, there are excellent graphics and sound. The game comes on a cartridge, soon to a store near you!

DEAR READERS

If you have a high score, please put it on the BBS or talk to me at the next meeting.

Ⓜ

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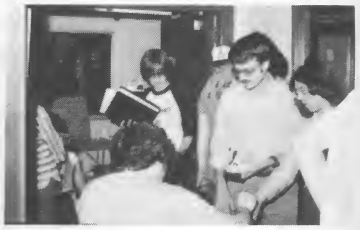
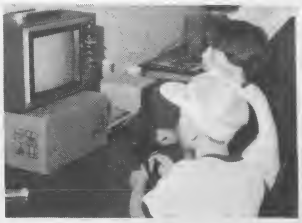


Judy Braun-keeping track of the funds!

Cator and Rice Q&A

Lots of kids and computers



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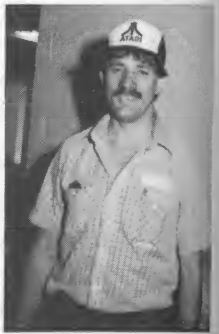

PARTY

Atari's Mark Cator
and Earl Rice

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ATARI MICROSOFT BASIC

Sheldon Leemon
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One of the features of the Atari Home Computer Sytem which reviewers often comment upon is that its BASIC language was not written by Microsoft. This is significant because Microsoft has written the BASIC interpreter for the Apple, the PET, the TRS-80, and for so many other popular micro computers that their version has become the de facto standard in the industry. This lack of a standard BASIC may have given some potential purchasers pause when it came to considering the Atari. Now, however, Atari has changed this state of affairs by adding Microsoft BASIC to the growing list of languages available for use with their Home Computer System.

Just what this will mean to Atari owners remains to be seen. One result will be a somewhat greater software compatability between the Atari and other popular personal computers. The instruction manual that comes with Atari Microsoft BASIC (I'll refer to it hereafter as AMB) even has appendices with instructions for converting programs from the PET, Apple, and TRS-80 to the Atari version. But despite the impression of compatibility that such instructions convey, the fact remains that Atari differs significantly from other computers in its hardware features, most notably in its graphics and sound capabilities. Programs which were written for other computers will not be able to take advantage of the increased user-friendliness that a generous helping of Atari sound and graphics can lend to a program, without a substantial reworking of the code. So while the implementation of Microsoft BASIC on the Atari will probably make available many useful and instructive programs, a thorough knowledge of the workings of the Atari computers will still be necessary to adapt these programs to take full advantage of the Atari's unique qualities.

Of course, the potential buyer will want to know not only what new commercial software AMB will make available for the computer , but also what advantages this BASIC dialect offers to the programmer who wants to write custom applications. This review will therefore try to highlight some of the more important features of AMB, to help you to decide whether it suits your own personal needs.

The initial question to ask yourself is whether you have a disk drive and at least 40K RAM. If not, AMB is definitely not for you--yet. The only version currently available is disk-based, and takes up about 19.5K of memory. With DOS booted up, that leaves only about 21K free in a 48K system, less if the RS-232 handler in the 850 interface is also booted up. Also, the disk is copy-protected, so you will always have to boot up with your master copy, and you will not be able to make back-up copies. You will also probably not be able to use this version with any of the new disk drives that require a patched version of DOS, including the Axlon RAMDISK board. Another side-effect is that in order to go to DOS, a MEM.SAV file must always be written, further slowing down the process of changing environments. If you find these limitations discouraging, don't give up just yet. Atari is already working on the next revision, which will be packaged in one 16K ROM cartridge, with a boot-up file of add-ons for disk users. This will allow owners of even minimum configuration systems to use Microsoft, with a minimum of fuss.

Before discussing the specific commands offered by AMB, a few words about Microsoft in general are in order. A number of features in Microsoft BASIC are implemented quite differently than in Atari BASIC. Those who have some experience with Microsoft on other machines will be quite comfortable with this version. Because it is based on the full, extended Microsoft model, it most closely resembles TRS-80 Level II, with a few more features. Those who have programmed primarily with the Atari 8K version are likely to notice a number of Microsoft's characteristic quirks as soon as they start to enter program from the keyboard. In Microsoft, no abbreviations are allowed, except the "?" for PRINT. No syntax checking is performed at the time of line entry, so errors in entry will not be apparent until the program is running. Also, Microsoft is much more particular about spacing than the 8K version, and failing to separate statements

continued

MICROSOFT REVIEW

from numbers will result in a syntax error. When you do get the error message, however, you will be pleased to find that it is in plain English. Many statements can only be executed in the deferred mode, not from the keyboard.

Microsoft lets you choose the precision of numeric variables. Integer variables (indicated by the % as last character in the name) can be chosen for speed, or double precision (indicated by a # at the end) can be used to allow greater accuracy in mathmatical calculations. For convenience, the DEF- commands (e.g. DEFINT, DEFDBL) allow you designate all variables starting with one letter as having the same precision. Math functions are implemented by the interpreter, not by the slow floating-point package in the OS ROM, which makes faster calculations possible. Also, logical operators such as AND and OR do true bitwise comparisons, as opposed to the Atari operators, which compare the truth of the whole expressions. Logical true equals -1, not 1.

The sytem commands that Microsoft offers for "housekeeping" are very convenient. AUTO allows automatic line numbering for program entry, and will warn if a number duplicates an existing line number. DEL allows you to delete whole blocks of numbered statements. LIST allows open-ended listing such as 500- to list statements with a higher line number than 500. LOAD will load programs saved in either SAVE or LIST format. RENUM offers complete renumbering of programs, including references in such statements as GOTO, GOSUB, etc. And commands such as LOCK, UNLOCK, NAME and KILL allow you to perform the DOS functions that require an XIO command in 8K BASIC. Additionally, TRON and TROFF allow the tracing of program execution by printing on the screen the line number of the statement currently being executed.

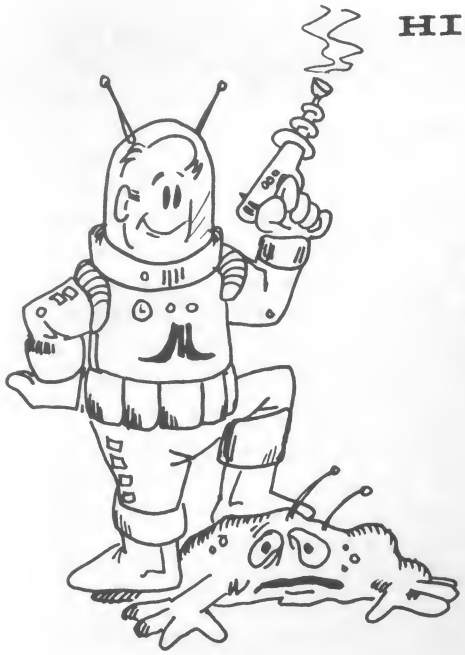
There are a number of significant additions to the general program statements offered by AMB. For example, the MOVE statement allows you to copy any number of bytes from one location in memory to another. This is helpful in animating Player-Missile graphics, and in moving the ROM character set into RAM, so that user-created fonts may be employed. The IF..THEN sequence now allows an ELSE clause which will execute when the IF clause is not true. OPTION BASE allows you to choose whether array subscripts will start with a 0 or a 1. The WAIT command allows you to pause the program until a location in memory takes on a spe=ific value. This is ideal for halting execution until VBLANK occurs, so that graphics changes can be made without disrupting the display. It could also be used in conjunction with the real-time clock for a measured pause. There is another time-related statement which is even more fascinating. This is the AFTER command, which allows you to change the flow of program control after a given period of time. For example, the statement AFTER (600) GOTO 200 would have no immediate effect on the program. But in 10 seconds (600 jiffies, or 60ths of a second), the program would stop doing whatever it was doing and start executing at line 200! This gives you in effect a time-driven interrupt.

A rather remarkable addition in AMB is the COMMON statement. This allows you to designate certain variables which are to keep their values from one program run to the next. This greatly facilitates chaining several related programs together to operate off of one menu program, and will be most helpful in overcoming the RAM limitations imposed by the size of the interpreter. Other new program statements include ON ERROR, a slightly different error trapping scheme than TRAP, which allows you to RESUME the program after an error at the line where the error occured, the next line, or at any designated line number. ERL will return the line number where an error occured, while ERR will let you generate any error, for purposes of debugging your program's error trapping code. OPTION PLM, OPTION CHR, and OPTION RESERVE statements let you set aside reserved areas of memory for player-missilie graphics, character sets, or machine code.

I/O operations have been substantially overhauled in this BASIC, particularly as they relate to Atari's unique system for handling I/O in a device-independant manner through the use of a Central I/O Utility. For example, the OPEN command used to assign an I/O channel to a device now has a more English-like syntax, e.g. OPEN #1, "K:" INPUT. However, there is a price to pay for this simplification. Because the command syntax no longer corresponds directly to the

Continued on page 18

M.A.C.E., JUNE, 1982



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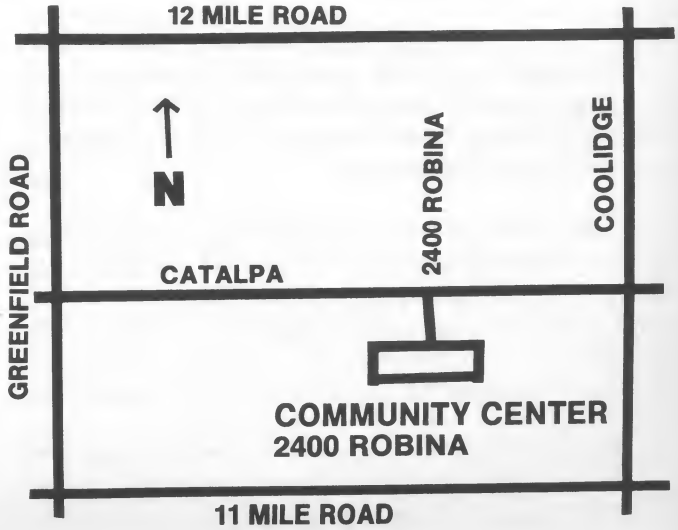

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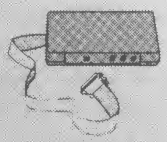

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MICROSOFT REVIEW

requirements of the Central I/O Utility, you can only OPEN a device for the READ, WRITE, UPDATE, and APPEND functions, and not to read the Directory. You cannot OPEN the cassette for reading or writing files with short inter-record gaps. This would not be so bad if the XIO command had been retained. But because most of its functions have been implemented through other commands, it has been deleted. The only concession made to the BASIC user wishing to perform missing CIO functions such as formatting a disk, reading the disk directo=y, or reading or writing a block of memory to or from a disk file, is the inclusion of a disk file called CIOUSR. This file provides three prewritten USR routines which will allow you to condition the I/O Control Blocks and then call the Central I/O Utility. However, the user who is sophisticated enough to take advantage of the CIOUSR file is probably sophisticated enough to POKE the right values directly into the IOCB, and call CIO with his or her own USR statement. The upshot is that some I/O flexibility has been sacrificed for the sake of ease of use.

In other areas, I/O flexibility has been greatly enhanced. The INPUT command will let you substitute your own prompt message for the default question mark, and LINE INPUT will let you input a complete line, ignoring commas, quotation marks, and other terminators. There are a number of handy statements to aid in producing neatly formatted output. SPC will print a designated number of spaces. TAB will let you tab to a given print column. PRINT USING is fully implemented, letting you right justify, insert decimal places, trailing spaces, leading spaces, commas, dollar signs, asterisks, and generally line everything up in nice, neat, uniform columns. For screen output, the POSITION command has been replaced with PRINT AT(X,Y), where the variables X and Y indicate the screen row and column. Interestingly enough, this command also replaces the statement POINT, when used with a disk file as the device--in that case, the variables x and y indicate the sector and byte to write to.

The function library in AMB is mostly the same as 8K BASIC, although the math routines will generally have greater accuracy, and better speed. Trig functions are only available in radians in AMB. TAN is implemented. RND is a little more flexible, allowing you to generate random integers, and repeatable pseudorandom sequences as well. TIME is added as a function which returns elapsed time to 1/60 of a second. And the USR command is somewhat different in AMB. Rather than passing arguments to the machine language routine on the stack, AMB passes only one integer argument, directly onto two zero-page locations. While a programmer can use RAM from $CD to $FF in a USR call, there are no "safe" user zero-page locations, where variables can be stored immune to meddling from BASIC. As a matter of fact, not even page 6 is sacred--BASIC uses half of it, leaving little protected space for non-relocatable code.

One of AMB's great advantages over 8K BASIC is its ability to accept user-defined functions. This lets the user in effect make up his or her own BASIC commands. For example, as mentioned below, there is no AMB statement comparable to STICK(x), which returns the value of the joystick. However, the user could define such a function with the line DEF STICK(X)=PEEK(632+X). Then, every time thereafter in a program STICK(X) was used, the function would return the value of joystick number X. Moreover, the user could even define HSTICK(X) and VSTICK(X) as in BASIC A+, where the functions would return a 1, 0, or -1 depending on whether the joystick is being pushed up or down, right or left. One of the more serious oversights in the manual is the glossing over of this command. The functions which it allows you to define not only save time over a subroutine call, but can make possible the use of program constructs which otherwise could not be used. The DEF statment also allows you to define string functions, which will perform any allowable combination of string manipulations.

Perhaps the most significant difference between Microsoft and 8K BASIC is the way in which they handle strings. In 8K BASIC, strings are one dimensional, they must be DIMensioned, and can be as long as memory allows. In AMB, one-dimensional strings don't have to be DIMensioned, and true string arrays are implemented. This latter feature is greatly prized by Microsoft enthusiasts, who find that string arrays much simplify the task or character data manipulation. Maximum string length is limited to 255 characters, however.

continued

MICROSOFT REVIEW

In Microsoft, you don't have to allocate string space with a DIM command. Storage space is dynamically allocated by the interpreter. If the amount of free memory consequently gets low, AMB performs what is known as string-gathering or garbage collection, by which it reclaims sting space that had been previously allocated but which is now unused, and compresses the strings down to the space actually occupied by data. The programmer should be aware of this feature, as it may cause a noticeable pause in a program while it occurs. As an offshoot of this process, strings tend to move around in memory while a program is running, making them a less dependable place in whihc to hide machine-code subroutines, player-missile graphics, etc.

In addition to string arrays, many other handy string features are implemented. There is a true concatenation operator (C$=A$+B$). LEFT$, MID$, and RIGHT$ help separate out substrings, and INSTR performs a search for a substring within a larger string. STRING$ allows you to fill a string with any number of repetitions of a single character, or string of characters. Other functions now included within string operations are INKEY$, which records a keypress on the fly, TIME$ which returns the time in Hours : Minutes :Seconds format, and SCRN$, which replaces LOCATE, returning the value of data under the graphics cursor.

In the area of graphics, AMB is very similar to 8K BASIC. Major changes include the combination of PLOT and DRAWTO into a PLOT (X,Y) TO (X,Y) command that can be chained indefinitely within a single statement--a much streamlined procedure over the 8K BASIC version. A CLS command has been included to clear the screen. Also, SETCOLOR has been expanded to include the registers for player-missile graphics.

Player-missile graphics are supported to a moderate extent by AMB. The OPTION (PLM) commands set aside space for either single-resolution or double-resolution PM graphics, and puts the location of the base address into the proper hardware register. This address can be found with the VARPTR command (AMB's answer to the ADR function), and can be used to calculate the offsets into player and missile storage areas. As stated above, the SETCOLOR command can be used to control player color. The MOVE command can be used to shift the offset position of a player, to achieve vertical movement. But player width, priority control, horizontal position, collision detection, and other features still must be implemented through PEEKs and POKEs. Here is another area where the DEFined function could give the user a lot of aid. The manual thoroughly documents the features of PM graphics, and gives plenty of step-by-step examples for the beginner. This is a big improvement over the 8K BASIC manual, which does not acknowledge the existence of PM graphics. However, this manual still ignores the existence of the GTIA chips, and graphics modes 9, 10, and 11 which it makes available to users of machines made after 1981.

Last but not least we come to game controllers and sound. As mentioned above, there are no commands for joystick, paddle, or light pen reading, although they can easily be implemented with DEFined functions, or PEEKs. There has been, however, a pleasant addition to the SOUND statement--a fifth parameter that designates the duration of the note in 60ths of a second. This means that you no longer have to write imprecise delay loops to sustain sound effects.

The AMB manual is somewhat sketchy on the features of AMB that are common to all Microsoft BASICs, so that some prior knowledge of those features would really help the user. Such information is readily available from any of the great many books devoted to BASICs such as the one used by the TRS-80. On the other hand, as far as Atari specific features go, the manual is most detailed, giving explanations and examples concerning PM graphics, alternate character sets, a memory map, and information for translating programs from other BASICS.

So there you have it. Atari Microsoft BASIC is large and feature-laden. Many users will find that the new commands far offset the trade-offs such as large memory requirements, limited string length, etc. For other users, who would like an extended BASIC, but who prefer the format of Atari 8k BASIC, BASIC A+ will probably be a better choice. Ⓜ

HOW TO WRITE A PROGRAM

By Dale Eisenberger

So you want to write a program. Fantastic! That's why we bought Atari computers in the first place.

"I've never programmed before. What do I do now?" you ask. "Where do I begin?"

In very general terms, a program receives inputs, does something with those inputs (processes them), and produces outputs. What do you want your program to do? For an example, say that we want the program to:

1. Receive 2 inputs from the keyboard.
2. Multiply the two numbers together.
3. Print the two numbers and the answer on the screen.

This process of breaking down what the program should do is known as an overview. Notice there is a lot of detail included. Until you have decided what you want to do, you can't decide how you should do it.

You start by writing notes on the program down on paper. Except in simple programs, the variables become too numerous to remember. Make three columns, labeling the INPUTS, PROCESSES, and OUTPUTS. Underline your variables so that they are easier to spot.

Start with OUTPUTS first. This is important. Remember, until you decide what you want, you won't know how to go about doing it. Put this under the OUTPUTS column:

PRINT something+something= something

We know that there will be two input variables and an answer. We'll call these variables IN1, IN2 and ANSWER. It is important to put these variables in their proper column since these variables start elsewhere. Put the first two variables, IN1 and IN2 in the INPUTS column. Also place some descriptive informationwith them, such as, ''This is the first number from the keyboard that will be part of the multiplication calculation." ANSWER is a wroking variable. Put it under the PROCESS column.

Next, under the PROCESS column, write down how you are getting your answer. The entry might look something like this:

IN1 x IN2 = ANSWER

Or, remembering how BASIC sets up it's calculations:

IN1*IN2=ANSWER

Under the the column INPUTS, write what you wanted to input:
Recieve two inputs from the keyboard.

TO SUMMARIZE:

1. Define what you want your program to do (Overview)
2. Write down your program notes on paper.
3. As you find a need for variables, name them, describe them, classify them as INPUT, PROCESS or OUTPUT and place them under their appropriate columns.
4. Start with your OUTPUTS when you're analyzing your program.
5. When possible, put your notes in BASIC format.

It really was a simple program, wasn't it?

```
10 INPUT IN1,IN2
20 ANSWER=IN1*IN2
30 PRINT IN1;"+";IN2;"=";ANSWER
40 END
```

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By Jerry White

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This is a professionally printed, multi-color magazine that will be of interest to anyone that has an Atari computer or VCS or any type of electronic game. The June issue consiste of 82 colorful pages with column headings such as Questions and Answers, Inside Gaming, Computer Playland, Arcade Spotlight, Passport to Adventure, Programmable Parade, and Strategy Session, just to name a few.

The June Computer Playland section contains in depth reviews of Atari computer software such as Krazy Shootout, Captivity, Protector, and Ricochet.

This magazine is loaded with colorful illustrations and information of interest to all you game freaks, and is highly recommended by this particular freak.

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